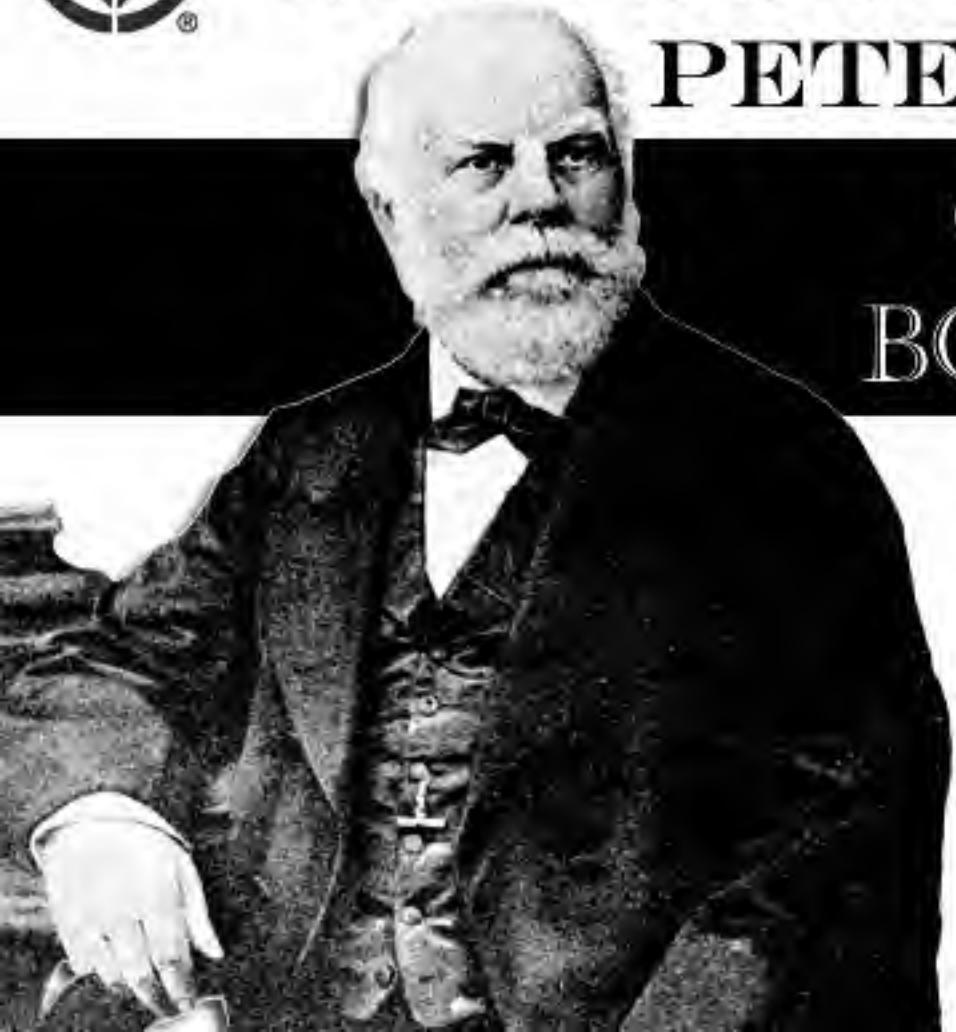




MISSOURI BOTANICAL GARDEN

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GEORGE ENGELMANN BOTANICAL NOTEBOOKS

*Pagination Note:
Since many of the items lack a specific
page number, the page number displayed
online refers to the sequentially created
number each item was given upon
cataloging the materials.*

P. repens Mich Ab prof. 1.49 t. 2 1810

P. in Hudsonia Biroet dict Caoyd. 5, p 339 1804

P. in Banksiana Lamb monog. Pl. 1 (1803) p. 7. t. 63 quoted by Rush 1816

E. P. Austin finds it on Lake Michigan at Huron always on sandy soil, near Oconto (on Green Bay, Wis.) on dry sandy ridges in the swampy woods (these latter consisting of deciduous trees and *P. strobus* & ^a *P. sap.* *res.*) always near the lake, - not - there at least - on "rocky banks" He never saw it on rocky soil in the lake region. -

Trees 3-10 inches diam & 20-30 feet high. - In some localities he saw them 12-18 inches diam, but same height; a few miles up Oconto River he found some trees 50-60 feet high, with 12-18 inches diameter. ^{like resinous}

Leaves seem to persist 4-5 or even 6 years, as the number of naked spaces on branches, left by the male flowers of each season indicate.

E. P. Austin writes Aug 4th 1863 from Oconto, Green Bay Wis: A few miles up the river I have noticed much larger trees than seen before; some are 50-60 feet high, and 12-18 inches in diameter.

In 1878 *P. Banksiana* in A. B. Mission, comes open or remaining closed and persistent for 10 years or more - Comes single or several (2 or 3) together; mostly curved, suberect or ascending, rarely quite pectinate - latent or occasionally ^{at} terminal. sometimes several (2) tiers of buds, both lateral, or the uppermost subterminal.



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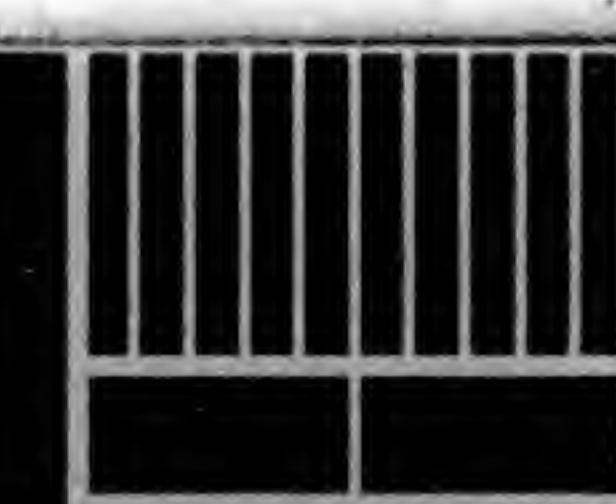
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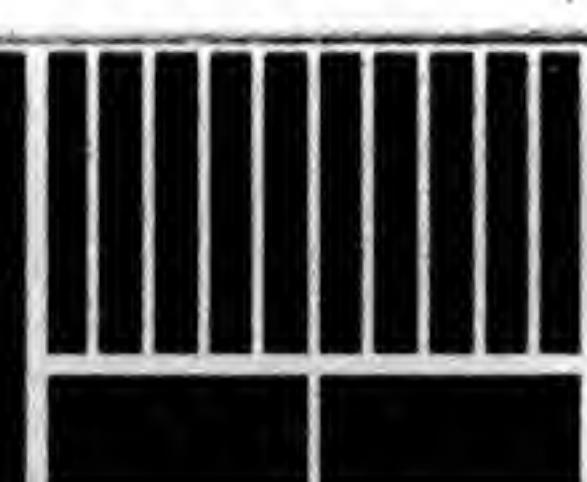
Rec'd May 26
as soon as
On board Steamer "Meteor",
at Marquette, Mich.

May 22. 1873.

Dear Dr. Engelm. -

We have been driven
back here by the ice, which has
broken one of the Steamer's wheels.

I wish to add a few facts to
my remarks already sent you on Pinus
Banksiana. It grows here in abundance;
& I find similar traits to those exhibited
elsewhere. I have noticed particularly the
development of the cones. I find here, fre-
quently, branches from 7 to 9 ft. in length,
bearing 9 series of cones from 7 to 12 inches
apart, 2 cones generally in each series, and
representing probably the growth of 7 to 8
years or more. The series are very nicely
graduated, the smaller ones (of those which
are full grown) being toward the base of the
branch (of course the oldest cones) & the largest
(& younger) toward the extremity. For ex-
ample the 1st series (a foot from the base)



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measures 1.0 & 1.1 in length; the 3rd series, 1.3 and 1.4; 6th series, 1.5 and 1.7; 8th series, 1.6 and 1.9; - the 9th series being young immature fruit of last season, ~~are~~ about 6 inches from apex, & only $\frac{1}{3}$ of an inch in length; while at the apex are the undeveloped fls. of the present season. The intermediate series which are not given have a like proportion. Of the first seven series the cones are of an ashy-gray color, appearing to the eye as if dead; ~~the~~ the 8th series are of an olive- or yellowish-brown color. - Now all of these full-grown cones, even the oldest, remain, in numerous instances, hard & completely closed, showing no intention of opening. There does not seem to be any regular order or law observed in the opening of them; for though I find those toward the base of the branch (the oldest) frequently open, while the rest remain closed, which would appear the most natural order of development, I as frequently find the cones open toward the extremity of the branch only, & again, open only at the middle of

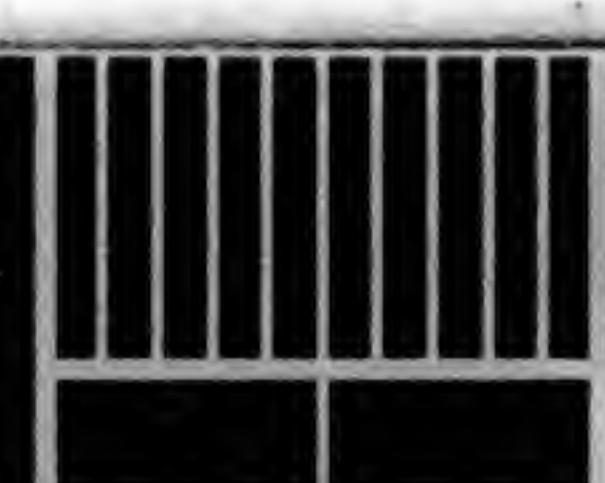


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the branch; while, as already mentioned, the entire of the cones of a single branch, & sometimes of the whole tree, are seen rigidly closed. Again, it is common to see one of a series completely developed & open, while its twin cone remains closed, & seemingly resigned to a five or six years sleep. — As to the individual cones, a similar state of this is also observed. While they often are found open only toward their base, they are seen as well open only toward or at their apex, and, again, at only one side at their middle; or the entire cone is enclosed, with the exception of the imperfect basal portion. — I could discover no cause, & can assign no reason for the facts here recorded. The development mentioned appears to be completely arbitrary. In one of the oldest of those cones (certainly seven or eight years old) which had just taken into its head to commence unfolding, I found the seed perfectly sound & sweet, & apparently capable of germination. This disposition to lie



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dormant is quite remarkable.

There is a great amount of variability in the curvature of the cones, which is so marked a feature of this species. In some cases the axis remains almost straight with the exception of a small portion at the base near the stem, which is nearly at right angles to the rest, & where the greater development of a dozen or more of the flowers on the outside of the cone (a circumstance always present in ever cone of the species) has produced a sort of humpiness, a la "Grecian bend"; again, there is often a general & more graceful curvature (of greater or less degree) of the axis; or, as is quite common, there is an abrupt hooking at the apex of the cone. In the fall-grown cones which remain closed, the different forms here described do not appear to be peculiar to any age, or any position on the tree. It apparently takes at least two years for a cone to obtain its full growth, & it is only in the cones of two or more years old that the extraordinary development of the fruit



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Rec May 26 1873

here mentioned (curvature, &c) is seen. The frt. at one year is perfectly symmetrical, though quite immature & only about $\frac{1}{3}$ inch in length. The curvature, &c., disappear in the fully-opened cone; so that the frt. becomes at maturity once more symmetrical.

I consider these obsrvs. worthy your attention, & will be glad to hear from you, as already mentioned, at Detroit.

Very truly yr

Henry Gillman

Dr. G. Engelmann.

St. Louis

Missouri -



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though not to the extent of some other species. at single ring will often be found remarkably wide (in the midst) of narrow rings.

Rec'd. Feb 24th
Ans. March 11

80 Elizabeth Street West,

Detroit, Feb. 21. 1874.

Dear Dr. Engelmann,

The foregoing measurements were made by me when at East Saginaw, in October last, & thinking they would prove of interest, in connection with the measurements I had already sent you, I enclose you a copy.

I wrote you in September, in reply to a letter rec'd. from you, & enclosing a little plant for identification, but I have had nothing from you since.

In your reply to my letters written you from Marquette, Lake Superior, in May last, you will remember you rather questioned, ^{the correctness of} my estimate of the age of the branches of Pinus Banksiana; a subsequent visit to Marquette gave me an opportunity & leisure to make a thorough examination, as to the age, &c. - The measurements were carefully made, the branches being cut off & the annual rings counted. As you will perceive by the following table, the result more than sustains my estimate.



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Measurements of the branches of the Gray Pine (Pinus Banksiana) made at Marquette, Mich., (Lake Superior) by Henry Gillman, Aug^t 3rd 1873.

<u>N^o. 1.</u>	1" in diam.;	6 series of cones;	11 annual rings.
<u>N^o. 2.</u>	1.5" in "	11 " "	10 "
<u>N^o. 3.</u>	1 $\frac{1}{8}$ " "	11 " "	9 "
<u>N^o. 4.</u>	0 $\frac{5}{8}$ " "	4 " "	6 "
<u>N^o. 5.</u>	0 $\frac{3}{4}$ " "	11 " "	8 "
<u>N^o. 6.</u>	0 $\frac{3}{4}$ " "	6 " "	9 "

The height of the trees would average 10 feet.

The above measurements are a supplement to the observations recorded in my letters to you from Marquette, in May, 1873.

I would have sent you these data at an earlier day, but press of business prevented.

With best wishes, & hoping to
hear from you soon, I am

Very truly yours

Henry Gillman.

Dr. George Engelmann

St. Louis

Missouri.

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Rec Aug 2
Ans Aug 9

Oconto July 28th 1863

Dr. Engelmann,
Dear Sir,

Yours of July 21st as also the
"Transactions" are at hand for which
I am much obliged.

The only pines I have noticed in this
vicinity are *Pinus Banksiana*, *P. resinosa*
P. strobus, *Abies Canadensis* & *Larix Americana*
A. balsamea undoubtedly also occurs but I
have not met with it ~~as yet~~.

Abies nigra I have never recognized in
this part of the country we have in
Southern Michigan numerous "spruce swamps"
which are filled with small trees of what
I suppose must be that species but since
I have turned my attention to the pines
I have never had an opportunity to ex-
amine them. It is only within two or
three years that I have paid any atten-
tion to the pines and then only to note
what species grow in any particular local-
ities without regard to peculiarities.

P. Banksiana I have only noticed at
Grand Haven on the East shore of Lake
Michigan at ^{at Peck's} ~~James~~ a bay in the N. of
Laginaw ^{at Peck's} ~~6 miles~~ ^{of Oconto} and at this place. It is quite



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likely I have seen it at other places but have not paid any attention to it before last year, in all of these places it only grows in sandy soil near the lake shore and I am inclined to doubt its ever growing on "rocky banks" as described in "Gray's Manual" at least I am quite sure it does not grow in rocky soil in this part of the country as I have examined many localities where the shores are rocky and there are no signs of it though the other species which are associated with it are abundant.

The western shore of Green Bay is mostly low and swampy with occasional patches of higher ground and on these higher places are found patches of *P. Banksiana* to the exclusion of almost every other tree in the more swampy places it gives place to *L. Americana*, *P. Strubus* & *deciduans* trees, these groves extend in some places two miles inland and the trees are far the most perfect from three to ten inches in diameter and from 20-30 ft high in the more open spaces however single trees attain a diameter of 12-18 inches but are no higher than those in the thickets. The canes are persistent



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along the branches for many years, in fact it is almost an exception for one to fall to the ground so that the all branches are covered with the black canes which have weathered many winters.

The staminate flowers are produced at the base of the years growth of wood and appear always to occur on the same branches so that we have a naked space where the flowers have fallen off then a short space with leaves another space for flowers and so on to the number of 5 or 6. The sterile flowers are also inclined to be persistent for two or three years, whether the branch which has ~~this~~ produced sterile flowers for several years ever produces fertile fls. I am not prepared to say but have not noticed any such case.

The specimens I sent you were collected July 13th.

I will send you specimens of the wood of all the pines I met with and also leaves fruit &c of other species.

In your description of *P. anisata* you speak of the sterile branches having many naked spaces where the ster. flowers had fallen off from year to year, I have

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seen off sterile branches of *Prasinosa* as many as over 6 such spaces and I think more and have seen abundant evidence that the leaves both of *P. prasinosa* & ~~P.~~ *Banksiana* often if not generally endure ~~more~~ 5 to 6 years at longer.

I am only temporarily stationed at this place making observations for latitude and longitude and shall leave here in a couple of weeks or thereabouts.

Do you desire more dried specimens of *P. Banksiana* or *Prasinosa* I have dried specimens of *Banksiana* which were collected a couple of weeks earlier than those I sent and therefore have the sterile flowers a little better I think than those I sent.

On leaving here I expect to go to Washington Island about 60 miles from here where *A. Canadensis* & *A. balsamea* are abundant and where I expect to find *A. nigra*.

Yours truly
E. P. Austin



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P. serotina

1351-7



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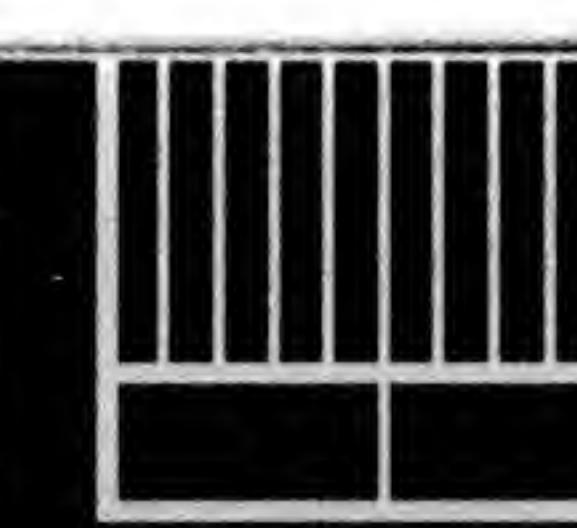
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Pinus strobus (?) found by Rev. Mr.
- Bloom as late as May 2^o (early
spring of 1871) a few miles from St. Paul



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1870-1880, 1880-1890, 1890-1900
George Engelmann, Missouri Botanical Garden

1652

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P. scrotina not to be
found, ~~only~~ in Ct the 1870.
Does not exist?



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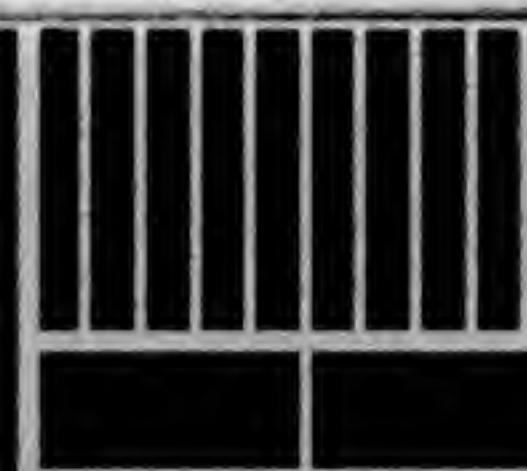
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12242
inc. of. S. E.
Sphaerantides
sa specimen
MISSOURI BOTANICAL GARDEN PAPERS
GEORGE ENGELMANN
no. 1
R. J. Park
kersonne di sua
"2 marks

The stinkin' Pinus serotina
was in flower (I x 9
quite young) on May 2nd 1877

Horace L. Arnall

— C.H.



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Prunus serrulata

Michx Fl. Am ed. II. 157.

"*Anemone* max. erecta - incomb. long"

[= *P. rigida*]

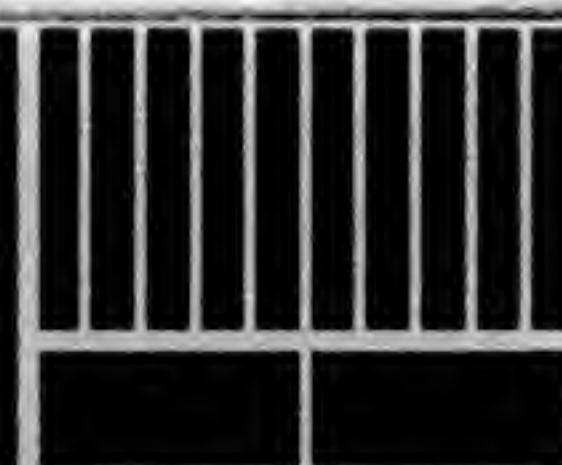
Arments straight 6-8 l. long, cones
eggshaped

Michx Fl. 205 Arment max in [capitula]
ovoidium angustis erecta - incomb. long,
oblong - ovatis lateis

Park Fl. 67 copies arment for *Melusina*
as "strong suspect" that it is only a var.
of *P. rigida*.

Gray Man
shape of fls

Thunberg also
considers them distinct.



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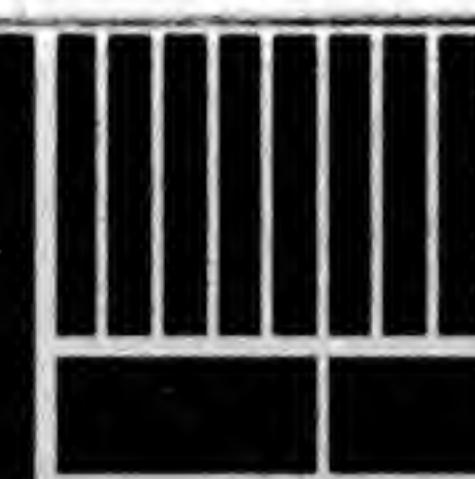
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**JONES & LEITCH,
DRUGGISTS**
COR. FIFTH & MARKET STREETS,
ST. LOUIS, MO.

Kirpatrick & Co. Cor. Main & Vine.

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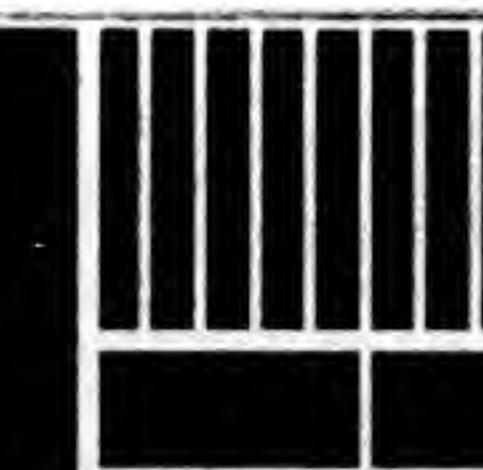
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Pinus strobus with us grows only in damp places around ponds, and where the soil is wet, frequently under water, hence the popular name of Pond Pine.

H. W. Ravenel April 21. 1866



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Wm H. Rawson, Atch. May 1877

Seed of *P. austalis* germinates in Nov, as soon as it falls from the tree
Shall I send you a specimen?

If I were more familiar with the tree *P. nigra* & its
middle & winter states, I could it would enable me to make
more satisfactory observations of the difference between that
species & an so-called sententia here. They may at least
turn out to be the same species, only under different forms
arising from location, latitude &c as Prof Gray suggests in
his manual. But *P. nigra* grows also on dry soils,
why is it that this is always found in drifts growing
pools & flats ("Pond Pine") - A "Pond variety" Prof G.
will say. Well you have the title of the leaves & must
right it out. If I cannot give you much aid, I hope at
any rate, with the assistance of Dr. Blackwelder in finding
even the Cone & Pines, scattering unto the trouble, will
come out of it. Although I am feeling better than I did
last summer, I am not strong enough to walk any distance
into the wood, & hence my inability to go out after
the Pines. I have sententia in flower, with male & female cones ^{decay 1st.} on

I have opened some of my dried cones of sententia & find some
entirely barren, others with a few sound seeds. I think
they remain closed for ever unless there are a sufficient
number of sound seeds to give vitality to the cone.

I have since added infruct (in fruit) to the collection, & will
endeavor in the course of a week or two, to procure a degree
or more of sententia - & also in October to get some cones.

You sent me several years ago your "Specimens of the
Cactaceae of the Pen. of the U. S. &c" Proceedings Am. Acad. of Arts & Sc. 1856."



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Botany Catalogue

2 ten years ago Dr. Denney, among other things, sent me
to you a specimen of *Pinus* & Dr. Sigelov with the plate, on the Catalogue
of the N. N. Expl. Expedition. If this is what you allude to
I think have it, — thanks for the offer.

Would not the application of the name of *Phyllostachys*
be a good test in the discrimination of doubtful & allied species.
& may it not be applied to this *Pinus* you send? There have been
amazing disputes in the mind recently in examining various plants
& among other things I note the following — Prof. Gray says in his "Handbook
to Structural & Systematic Botany" 1858 p 134 — "In the case of the numerous
the leaves of *Baptisia* pubescens, which are really 5-ranked, often appear to be
monostichous on one rank; but this is owing to a torsion of the axis."

I think I have just tried the leaves are really alternate on the branches
& that in the young growing plant, as the axis elongates, & the young leaves
in their pre-eruptive condition become free, there is ~~an~~ ^{an} alternate torsion
of the internodes alternating from right to left & from left to
right. The habit of this plant like most other *Baptisiae* is
with spreading branches — & hence this torsion arises from the
strong effort of the leaves to present their upper surface to the
direct light. The proof is this — the leaves in pre-eruptive are folded
exactly like as they expand, they all seem to be
alternately exactly ^{horizontal} to each other. By inserting a knife under the
one side — viz. the ~~other~~. By inserting a knife under the
back of the base of one petiole & stripping it down, it is seen to
wind spirally to the point opposite the axil of the next lower leaf
& this in alternate internodes from one side & then to other.

I have prepared specimens which show this very plainly, & if
you take interest in such questions, will send you some of
them. I suppose you might try it on some of your herbarium specimens
I enclose some open flowers & also the stems & petioles of *Yucca*
filamentosa, you may try & S.

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W.W. Raebel



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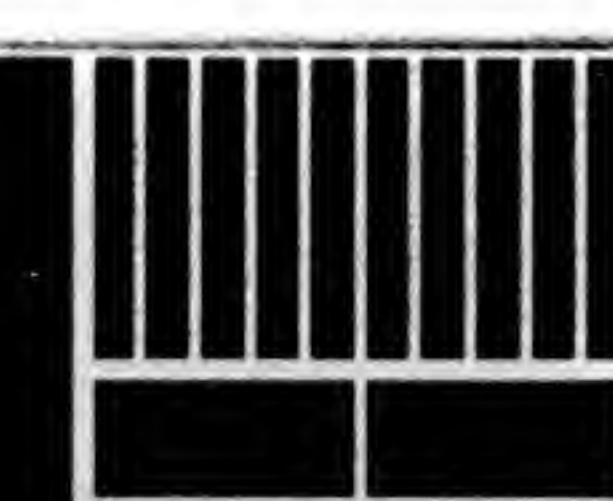
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P. rigida

1351-8



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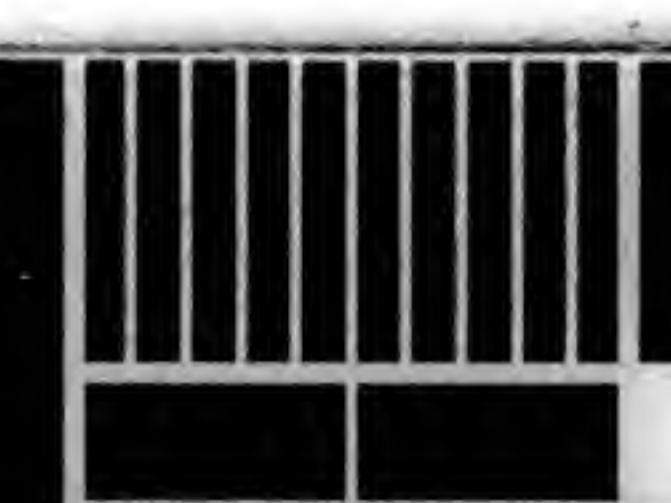
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P. des mésidé Mich. Sylv. Ann. ed. II, 155
Anemone meso- erecto-incombusta
Annuals straight upright long, and
winged [?]

Wherever the trees grow in mosses
the cows are dispersed singly over the
branches; but on solitary stocks
they are collected in groups of 4, 5 or
more. Not in Flora of Michaux!

Park Fl. B. 72 copies Michaux as to annuals:
An. meso. erecto-incombusta, erecty laevigata



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ENNO SANDER,
A POTHECARY

Corner of SECOND and WALNUT STREET
under Barnum's Hotel,

Saint Louis, Mo.

JOY & LEITCH
DRUGGISTS
COR. FIFTH & MARKET STREETS,
ST. LOUSS, MO.

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Pinus strobus

Cork Pine is the name the lumber
men give to a var of *strobus*
with finer grained lighter less resinous
wood, of yellowish colour. ^{bark thicker} It is higher
priced than the ordinary *strobus* - has
much less sap wood. Cone said to
be smaller, but I do not find it so

Henry Gillman June 22, 1876
& J. G. 4

A fine large section of "cork pine" was in
the Michig. Dep. Agric. Exhibit. Philadelphia
very close grained. GE



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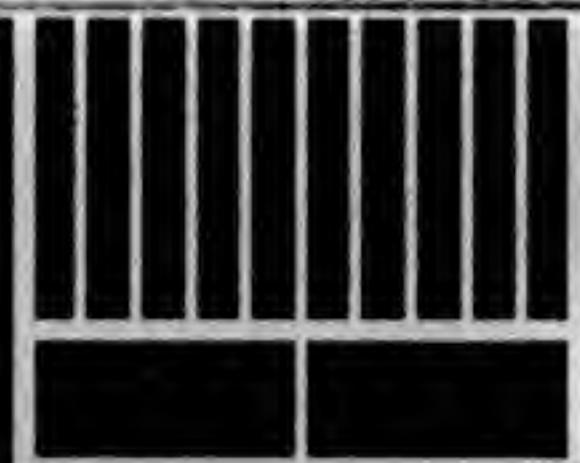
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Dear Dr.

Will you please come
over and see my baby some
time today. I am afraid he
has the same disease as Anna.



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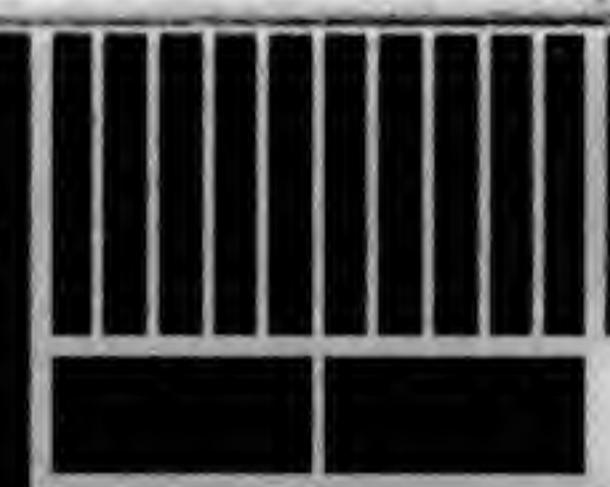
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Pinus mitchii near Hiken S. C.
has the femaleaments and cones invariably
1½ to 2 inches below the apex
(of that year's growth.)

W. A. Brewster June 1890.

I have seen no two sets of cones on
some years growth as is common in
P. strobus or *P. strobus*.

the same.



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BOTANICAL
GARDEN

12250

MISSOURI BOTANICAL GARDEN
GEORGE ENGELMANN PAPERS

1581 ~~atase~~ 2



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cm

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MISSOURI
BOTANICAL
GARDEN

Pinus strobus

Port Clinton, Schuylkill Co.

Pennsly. leaves sometimes in threes.

Cones singularly persistent, sometimes
10-15 successive whorls of cones on one axis -
each of 4 to 10 cones!

This tree is very fertile and begins to bear
when very young.



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Eugene L. Massot,
DISPENSER OF
PURE MEDICINES,
THE FINEST CHEMICALS,
And Chemical Preparation,
CORNER OF FOURTH AND SPRUCE STREETS,
ST. LOUIS, MO.

MISSOURI BOTANICAL GARDEN
PAPERS
GEORGE ENGELMANN



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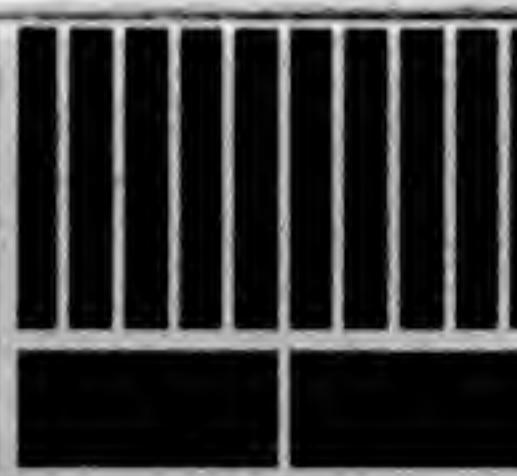
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Pinus exelsa is poor at
M Thoreau, Autrey and P. Stroby
won't grow at all, on coast of
heat, drought and heavy clay soil



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